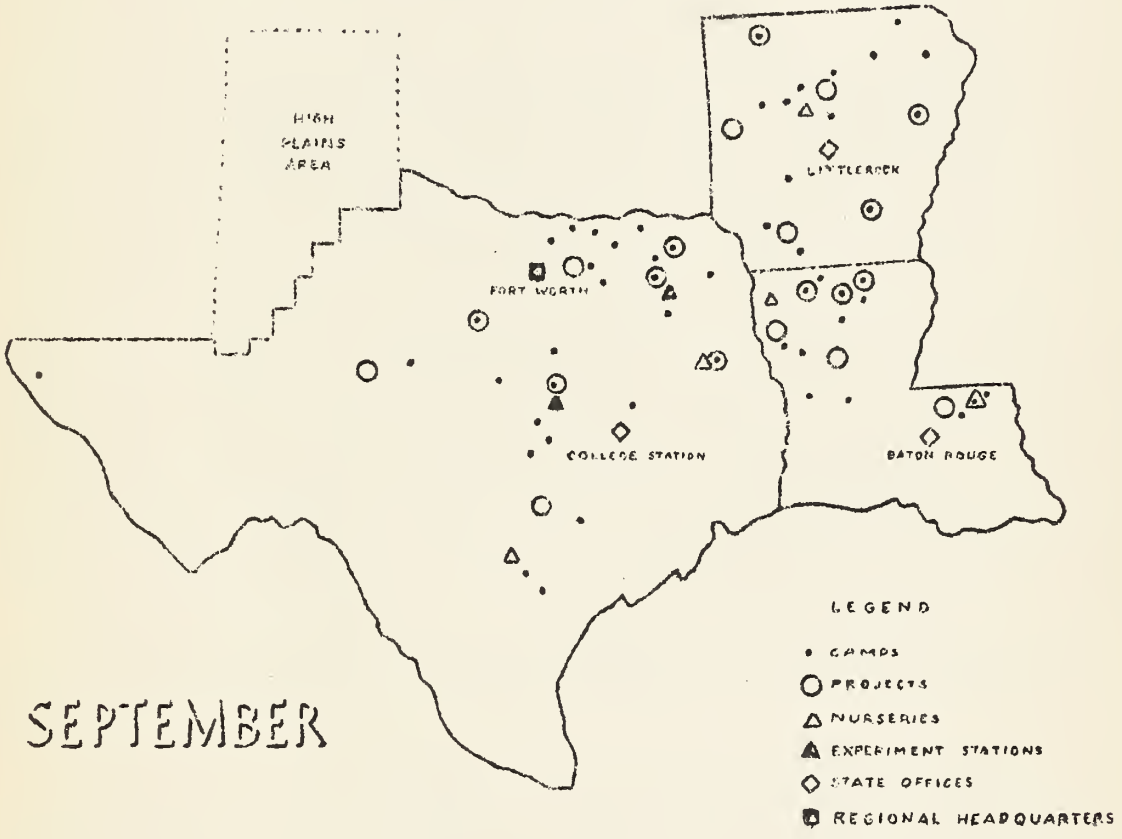
SOIL CONSERVATION SERVICE

NEWS



SEPTEMBER

REGION 4

COMPRISING STATES OF LOUISIANA, ARKANSAS, AND TEXAS, EXCEPT HIGH PLAINS AREA

METHODS OF EROSION CONTROL

(Concluding excerpts from talk made by H. H. Bennett, Chief of the Soil Conservation Service, before the Texas Geographic Society at Dallas recently.)

The methods of erosion control being worked out by farmers in cooperation with the Soil Conservation Service are simply an adaptation of Nature's method of soil protection and flood control to the conditions of advanced cultivation. Instead of leaving the face of the fields smoothly powdered and bare, inviting washing, as well as blowing, the idea is rather to roughen the surface, turn the earth itself and the plants themselves, into impediments to runoff, protectors of the soil. By as simple a device as plowing and cultivating around the hill, on the contour, instead of up and down the slope, each furrow, each harrow-scratch, becomes in effect a small dam or terrace. If reinforced by grass cover when the land is resting, a great deal of water will be prevented from running off. On steeper, more erodible slopes somehwat more elaborate methods are needed, but the principle of all of them is about as simple as that: To make running water walk, or creep; to store a far greater part of it where it falls in that greatest of all reservoirs-- the soil; and to do this by making the soil and its crops provide as impediments to runoff millions of natural little dams.

Flood control on our farm lands can not be a substitute for floodwater fortifications down the river; but it can provide a multitude of reinforcements.

The possibility of partial control, at least, at the spot where the raindrop falls, is plain. Spill a pitcher of water on a bare table, slanted, and it dashes off. If there is a cloth on the table, and under that cloth, perhaps, a pad, the runoff loses speed, volume and violence. The water does not hurry now to a lower level; it creeps-- by the slower process of seepage. Gifford Pinchot used much this same example to illustrate the virtue of forest cover at headwaters, years ago. On a map modelled in bold relief he poured water, and it flooded the lower levels. Then on the upland part of the map he put a blanket, simulating the protecting blanket that woodland spreads upon the soil. This time, when the same amount of water was poured, there was no flood.

The absorptive cover of vegetative litter not only drinks in a large amount of water, but shields the soil beneath from erosion and, so protects root holes and the burrows of insects and earthworms from clogging with moving soil. Into these hidden conduits rainwater and melting snow enter to be saved as ground-stored water.

Consider some of the findings at representative erosion experiment stations. On an 8-percent slope in Missouri, land cropped continuously to corn has lost year after year an average of 28 percent of the total precipitation as immediate runoff. On another part of the same slope, planted to alfalfa, only 4½ percent of the precipitation has been lost. Corn, at the same time, is clean cultivated and covers only a fraction of the ground surface. The corn land lost an average of 67 tons of soil per acre per year. The part of the slope that was in alfalfa lost not 67 tons, nor thirty, nor ten, nor even one ton; but only .28 of a ton of soil per acre.

At Tyler, Texas, land continuously planted to cotton on an 8 3/4 percent slope shed 20 percent of the water which fell upon it, as runoff. Forested land on a somewhat steeper slope (12½ percent), absorbed all but seven-tenths of one percent of all the rain which fell upon it.

These instances could be multiplied. On the basis of such findings, it seems probable that with retirement to forest or meadow of land obviously not fit to be cultivated, and with wide use of crop rotations, strip cropping and other soil-saving practices on this better of the erodible farmland, the flood load of numerous streams could be reduced from 20 to 25 percent. It is that last few percent of runoff in the swollen river which puts it over its banks and does the damage.

Soil erosion is a physical force. It must be met with physical weapons, fashioned in accordance with the principles of physics and mathematics. But soil conservation involves far more than the mere physical control of erosion. Inevitably interwoven with it are social and economic implications of vast importance.

Abandoned acres mean abandoned homes. About one-third of our population takes its living directly and immediately from the land. Land depletion and destruction is of direct and immediate consequence to some forty-odd million people. Deterioration of the land means the decline of social structures, forced migration, abandonment of farm lands, and the undermining of community life. Taxes can not be paid from impoverished fields. The burden must shift to those who can pay. Education can not flourish in communities hard-ridden by soil poverty.

The problem of soil conservation calls, therefore, for dual solution. First, it seems necessary to assure farmers of a stable income adequate to remove the stress of economic necessity. Second, it appears necessary to establish in the agricultural mind the fallacy of selling capital for an immediate cash consideration, and to convince farmers that soil conservation is neither incompatible with production nor costlier, in the long run, than exploitation.

Past negligence is water over the dam. The important thing is that we have finally come to a cognizance of the problem of erosion, and an understanding of the physical land crisis so definitely at hand. Out of that understanding the forces which will shape the new era of land conservation are arising. Many of them I firmly believe to be already at work. It is with them, and not with the mistakes of the past, that we are now concerned.

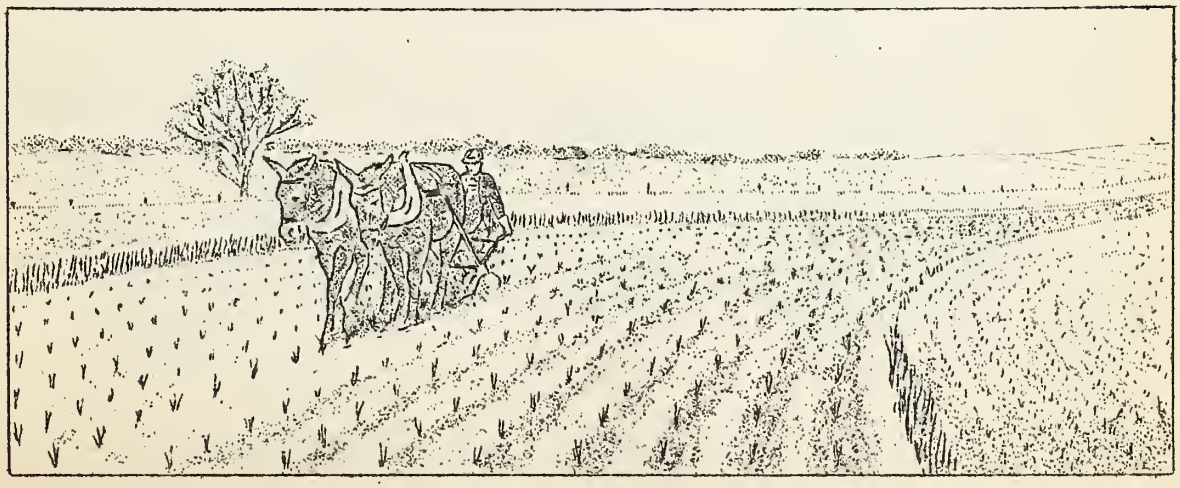
The program of the Soil Conservation Service is based upon a simple viewpoint. It does not aim at control of soil erosion on all the land of the country by the Government itself. Instead, it seeks the cooperation of the individual farmer of the community, and of the state. To the farmer, it offers the opportunity of placing his own farm on a scientific, practical conservation basis by cooperating in a national undertaking. The Service has assumed a role of assistance in conjunction with the state. The major burden rests upon the tillers of the soil.

The program of the Service is predicated on the belief that American farmers will be quick to understand the advantages of conservation methods and to apply them in the operation of their own farms. That basic principle remains the same, although activities of the Service have now extended into the field of actual work upon the land in cooperation with its owners.

Operations of the Service are being coordinated with the activities of state agencies-- the colleges of agriculture, the experiment stations, and the Extension Service, so that the well-established and far-reaching facilities of these organizations will be available for furthering among agricultural people the adoption of soil-conserving methods of land use and land treatment.

It is not impossible, however, to continue our agriculture on a basis that recognizes the existence of immutable natural laws. Through a system of correct land use we can farm most of our soil-- the more stable areas-- and keep it too. We can not safely farm all of it in clean-tilled crops that invite the destruction of our fields by rain and wind. The steeper and more erodible land which generally should never have been plowed must go back into trees or grass. Certain lands of the semi-arid regions, particularly the loose sandy soils, should never have been broken. But by and large, most of our crop land can be farmed profitably from the conservation standpoint if only reasonable concessions are made to the demands of natural laws. The program of the Soil Conservation Service asks only that these reasonable concessions be made.

And when they are made, the results will be measured in terms of national welfare.



WILDLIFE PRESERVATION A NATIONAL PROBLEM

(Continued from last issue)

By

Homer G. Towns,
Junior Biologist.

We might be inclined to think that if we use vegetation in the prevention of erosion that the wildlife species will take care of themselves. This is far from being true. We might have a large field of trees, giving complete erosion control, and yet be almost worthless for wildlife. Also, and more in line, there are hundreds of acres of idle land, waste land if you please, which has not as yet been definitely correlated into a profitable yield basis. This type of land is being turned out, without further thought, in the belief it will become a desirable wildlife habitat. It might eventually be so, but all the wildlife species might be gone before such time arrived. Such type of land is, however, one of our best bets for the improvement of the wildlife situation; but it will take plenty of thought and effort to get the job done. Why think that something that is worthless for any of our other agricultural systems would be ideal for wildlife? If such areas are protected against fire and overgrazing and then planted and worked as a wildlife management plot, they would soon become a valuable place, not only from a wildlife standpoint, but from erosion control and eventually bring in financial, recreational and aesthetic returns. It will take energey and thought, thurgh, and not idleness to get the job done.

RECOMMENDATIONS FOR STARTING TOWARD A WILDLIFE CONSERVATION PROGRAM:

1. Remember that it is going to take time, energy, cooperation from technical men, farmers and land owners, business men and sportsmen, and the education of our entire public to become "conservation minded," before much progress can be made.

2. In the farm planning, make provisions for wildlife food and cover.

3. Food and cover means plants which bear food, not just on the same farm, but in or closely associated with plants or other structures which offer permanent protection.

4. Food bearing plants are:

   (a) All the legumes (except some species of crotalaria), coffee weed (cassia tora), and perhaps a few others which are toxic.

   (b) All grains.

(c) Haws, wild plum, Huckleberry, blackberry, himalayan berry, currents and goose berries, persimmon, hickory, oaks, pine, holly, yaupon, many other fruit or nut bearing trees, vines and shrubs, and many of the common weeds and grasses; such as partridge pea (Chamaecrista sp.), lespedezas, chick weed, pigweed (Amaranthus), ragweed, wildroses, knot grass, Johnson grass, Dallis grass and many other weeds and grasses.

5. Some of the above named, or other food bearing plants, should be maintained throughout the year along fence rows, woods' boundaries, or other places which offer permanent cover.

6. All acreages of idle land, whether large or small, not definitely being used to an advantage should be planted to wildlife food and cover plants, protected against all grazing and fire, and if legumes and grains are used, (there should be in most cases) given enough cultivation to insure production.

7. All badly gullied or other severely eroded areas should be planted to the fruit bearing vines as blackberry, dewberry, himalayan berry and others; shrubs as wildplum, yaupon, or other adapted ones, and legumes as cowpeas, Austrian winter peas and soy beans. Some of these plants as the berries and shrubs could be used in pasture or field areas without having to protect them against stock.

8. The plants listed above could also be used to underplant scantly covered wooded areas or new tree plantings.

9. Fire should never be allowed to destroy places of permanent vegetation.

10. All farms should be posted and protected against hunters who will not pay for the privilege and protect the property and the wildlife.

11. In some cases it may become necessary to control predators. However, that will usually be limited to two or three species of hawks and stray dogs and cats.

PARTRIDGE PEA (Left)
A valuable Quail food.

COFFEE WEED (Right)
A poisonous weed.

Drawings 1/2 natural size - (From Britton & Brown)

A GRASS SEED COLLECTION PROGRAM FOR REGION 4

By

Simon E. Wolff, Range Examiner

The Nursery Division of the Soil Conservation Service is charged with the collection of the seeds of native grasses for erosion control plantings. The requirements are many. Seeds will be used to propogate grasses for permanent meadows, permanent meadow strips, meadow outlets, pasture outlets, terrace outlets, old and new pastures; in fact, in any place where erosion control is necessary and crop plants, shrub vines, or trees are not used.

Collections will be made from railway right-of-ways, waste places, abandoned fields, pastures and native meadows. Where large amounts are needed, as little bluestem (Andropogon scopanius) native meadow will be leased and the seed harvested by mechanical power strippers belonging to the Soil Conservation Service Nurseries. Since the best little bluestem meadows are found in the blackland prairie region of Texas, most of the bulk seed collections of this grass will be from that region. In order that the projects may have uniform seed, it is planned to thrash the stripped material, thereby eliminating the handling and transportation of large amounts of hay and trash.

Other grasses, as big bluestem (Andropogon furcatus) Switchgrass (Panicum virgatum), Indian grass (Sorghastrum nutans), dropseed (Sporobolus asper hookori) and side-oats grama (Bouteloua curtipondula) have been requested in rather large quantities. These will be used alone or to supplement plantings of little bluestem. No large areas of these grasses are known. All are mixtures in the native unplowed prairie meadows of Texas. Switch grass and dropseed are heavy seed producers. Big bluestem and side-oats grama produce very little seed. In harvesting these seeds it is important to know the quality and quantity of the seeds in the material.

Large quantities of buffalo grass seed have been requested, but owing to the difficulty in harvesting (the seeds have to be sucked off the ground) attempts to collect have been expensive and in a sense experimental. Small lots of seed have been taken from closely-cut or closely-grazed areas by sweeping. Where a large number of seed-heads are present on a closely grazed pasture and a heavy rain falls, the heads are often floated off the ground and lodged in ripples. Under such conditions quantities of seed could be obtained by sweeping with brooms.

Small lots of seed of many grasses are being collected. Some of these grasses show promise in erosion control, but are too widely scattered to collect in quantities. Such lots will be planted in the Nurseries or on projects for observation.

NURSERY DIVISION HAS IMPORTANT WORK

By

C. B. Webster, Regional Nurseryman

Trees, shrubs, vines and grasses are most important weapons in the battle for soil conservation and erosion control. They bind the soil, build up soil, help conserve moisture and permit the use of land that would otherwise be waste for useful purposes, such as fuel and timber production and pasturage.

Some idea of the extent to which these weapons are being used in soil conservation work can be gained from the fact that more than twelve million trees and 138,000 pounds of grass seed have been requisitioned by the Camps and Projects of the Soil Conservation Service in Region 4 for planting during the fiscal year of 1937.

It is the duty and work of the Nursery Division of the Region to provide these trees and seed. Four tree nurseries and one grass nursery are maintained for the purpose. The grass nursery is located at the old U. S. Field Station at San Antonio, Texas. One tree nursery is located at Nacogdoches, Texas. There is another with headquarters at Shreveport, La.; one at Mindon, La.; and a fourth tree nursery near Kentwood, La. Each station is in charge of a Nursery Manager, trained in tree or grass nursery work as the nursery demands. In addition to actually growing material these nursery managers have the responsibility of collecting or supervising the collection of all seed that is needed by the nurseries and by the camps and projects. Seed collection in itself is a big job that must be done in a very few short weeks when the seed is just right to harvest. In this collection work the nursery managers are aided by the CCC enrollees of the camps that work on Soil Conservation Service erosion control projects. This is especially true of tree seed collection. Most of the desirable grasses are found in the quantities desirable for economical harvesting at points far from the CCC camps. Therefore, much of the grass collecting work is done by labor hired locally and directed by the grass nursery manager or his trained assistants.

In addition to collecting seed and growing trees, vines, shrubs, and grasses, the nurseries test various seeds and plants to determine their erosion control value and viability. Unknown species from far and wide are collected and planted for observation. From these observational plantings new species not commonly known or used can be selected and developed for their erosion control value. At some of the nurseries cooperative research projects are being carried on with other Governmental and with state agencies. A most important project of this cooperative work is the grass breeding and selection work being initiated at the San Antonio grass nursery in cooperation with the Bureau of Plant Industry.

SURVEYS IMPORTANT TO EROSION CONTROL PROGRAM PLANNING

By

C. L. Orrbon, Chief,
Conservation Surveys.

Accelerated soil erosion begins as soon as the protective vegetative cover of trees or grasses established by Nature has been disturbed.

In comparison to the entire earth, the portion commonly referred to as soil is exceedingly thin. Thousands of years are required to develop the few inches of surface soil and weather the lower horizons so that plants can obtain sufficient available food.

"New ground" whether newly cleared woodland or virgin prairie land is capable of producing high crop yields. Continuous cropping results in lowered yields. This, in part, is due to depletion of mineral food constituents and the decrease in organic matter content but the greatest loss can be directly attributed to the ravages of erosion. Cultivation of sloping land, where no provision is made to control run-off of excessive rainfall, results in soil loss. When water leaves the field it carries with it not only the soil particles but available or soluble plant food so necessary to plant growth. Plants feed mainly in the surface horizons and removal of any portion of this layer decreases the feeding range and supply of plant food.

The Soil Conservation Service has technically trained men on the field staff who are responsible for determining the extent and character of erosion on the entire demonstration project area. Farms are selected as units. Every acre of the farm is carefully studied and the extent to which sheet and gully erosion has progressed is recorded on a map of this farm. Classes of sheet erosion based on the amount of surface soil remaining as compared to the depth of this layer before the land was disturbed are established. Gully erosion is based upon the number and size of the gullies. Five main classes of sheet erosion, one class representing recent deposition of material and three gully classes are recorded on the erosion surveys.

Class 1. This class includes those areas showing no apparent accelerated sheet erosion and is confined to the virgin soil areas.

Class 2. Slight sheet erosion or less than 25 per cent of the surface horizon removed.

Class 3. Moderate sheet erosion or 25 to 75 per cent of surface horizon removed.

Class 4. Severe sheet erosion or more than 75 per cent or all of the surface soil or part of the upper subsoil lost by sheet erosion.

Class 5. Very severe sheet erosion includes sheet erosion of the lower part of the subsoil and erosion of the parent material.

Class + This class includes those areas where material has been recently deposited.

Gully erosion is expressed in three classes:

Class 7. Occasional gullies or an average of three gullies or less per acre or gullies 100 feet or more apart laterally.

Class 8. Frequent gullies - or an average of more than three gullies per acre or gullies less than 100 feet apart laterally but less than 75 per cent of the area included within the gullies.

Class 9. Very frequent or destructively large gullies which consist of an intricate network of gullies that has dissected an area so thoroughly that 75 per cent or more of the area is included within the gullies. It may also include a single large gully.

The depth of gullies is also expressed by placing a circle around the class number as (7) which means a gully which could not be crossed by tillage implements and is cutting into a tough heavy subsoil and parent material. When a V is placed after the gully symbol as 7V it indicates a deep gully that is cutting into a loose friable parent material.

Therefore, when expressing erosion conditions on an Erosion Survey Map on a field where 50 per cent of the surface soil is removed and there are two gullies per acre, not crossable by tillage implements and cutting into a compact subsoil or parent material, it would be expressed as 3 (7)

This Erosion Survey is used by all members of the Project Staff to determine proper land use and to plan practical applications of erosion control. Definite recommendations can be set up for groups of soils showing different erosion classes. Badly gullied land and land showing loss of practically all the surface soil have low productive capacities, and are best suited for other purposes than the production of crops. The erosion symbol, in combination with other factors shown, on the map indicate the best land use to which it is adapted, its erosion potentialities and method of treatment necessary to minimize soil erosion.

DEVELOP OWN LAND UTILIZATION AND EROSION CONTROL PROGRAM

By

Edgar A. Hodson, Project Manager,
East Cadron Creek Project, Conway.

By 1931 the farming operations of the Clem F. Kaufman 302-acre farm near Morrilton, Arkansas, had passed into the hands of the five sons, while the elder Kaufman gave most of his time to running a country store. It was in this year that the Kaufman brothers decided there was entirely too much of the farm land that was "excess baggage"-- acres from which nothing was realized year after year. It was apparent to them that the steep areas could not be cultivated since most of the slopes ranged from 15 to 45 per cent. Already sheet erosion and gullying were taking a heavy toll from some of the cultivated lands. In fact the field just back of the family home was so badly cut up with gullies that further cultivation was not profitable even if possible.

It was on this field that the Kaufman brothers started their first erosion control and land utilization program. They retired the eroded field from cultivation, picked the rocks from the field and threw them into the gullies so as to form loose rock dams. They had noticed that Bermuda grass, where of good growth, stopped cutting and washing by rain water. So they set about sodding Bermuda in the field nearest the house.

The method of sodding was simple. Using a 6-inch shovel on a Georgia stock, chunks of sod were dropped in the furrow, stepped on and soil kicked over each chunk. Some of the gullies in the field were five to six feet deep. The brothers sloped the banks by hand with hoes and put in chunks of Bermuda sod and the loose rock and brush dams.

The Bermuda grew rapidly. Contour ridges were thrown up on the upper side of the field. In 1932 the field was seeded with Korean Lespedeza and Hop Clover. Weeds were mowed regularly. Today this field is one of the best pastures in central Arkansas. The gullies have filled in until they are mere depressions, well sodded over with Bermuda grass. There is no more erosion problem.

In cleaning the rock off the pasture so that it could be mowed the brothers used the stone to construct a dam at the lower end of the field that is 180 feet long and about four feet high. No attempt was made to construct the dam so that it would hold back all of the water. The idea was for the water to trickle through the crevices between the stones and flow off slowly into a natural drainage way below the pasture.

In the fall of 1933 the Soil Conservation Service project was established at Conway. The Kaufman farm lay outside of the project area. However, the brothers watched the work done by the Service on the farms of Cooperators and determined to set about on a real erosion control and proper land use program for their farm.

The brothers were already engaged in the dairy business on a small scale. They already know what Bermuda grass would do in controlling erosion on steep slopes. So they set about on a complete farm reorganization. They realized a good portion of their farm was too steep for safe cultivation but know that these steep slopes would not only grow grass, but that this grass would control erosion and afford good pasturage for dairy and beef cattle.

"We decided to utilize all the steep land that had been of no value in our past farming operations," one of the brothers says. "We started by picking off stones and piling them in the gullies. We killed out the scrub trees and sold a few of the best trees for timber. From the scrub trees cleared off the slopes we stacked up a wood supply that will last us without cutting another stick for 6 or 7 years.

"We did all of the clearing and cleaning up work in the winter time when it was too cold or too wet to do other work around the farm. After completing the clearing work on a certain area during the winter months we started sodding the area in the early spring. Some of the land was so rocky or steep that we could not plow furrows on it. Consequently we used a hoe to dig a hole and set out a clump of Bermuda grass."

As the excessively steep slopes were cleared off, tree limbs, rocks and other debris were piled across the hills, approximately on the contour. These checks have been working remarkably well in slowing down the rapid run-off of rain water and holding some of the moisture on the hillsides for the Bermuda grass. The grass on these steep hillsides is making remarkable growth and within three year's there will be a solid protective cover over the steep areas. Loose rock and brush dams in the gullies have stabilized them to such a degree that Bermuda has reached a solid growth over gully bottoms in a year's time.

In the fall of last year a soil conservation camp was established at Solgohachia. The Kaufman farm was put under Cooperative Agreement. "About all we could do," said Brad Scott, technician-in-charge of the camp, was to put in strip crops on the farm, lay out contour lines and a meadow outlet and tell the Kaufman brothers that they were just about twenty-five years ahead of most land owners with their erosion control and land use program. Except for a few details the farm was under an excellent erosion control program when it was taken under agreement. The Kaufman brothers have done a tremendous amount of work on their farm in clearing and sodding about fifty acres during the past three years. They say they expect to continue working with the steep slopes until 'every foot of it is under a good grass cover'."

EROSION CONTROL MEASURES CONSERVE MOISTURE

By

R. M. Milhollin, Project Manager,
Upper Concho River Project.

The moisture conservation value of the complete coordinated erosion program of the Soil Conservation Service, as applied to the land of cooperating farmers in the Upper Concho River project area at San Angelo, was given a thorough check recently when a rain varying from two to three inches fell in the vicinity of the Grape Creek School.

On Mrs. Lou Blair's farm, operated by David Baker, water was observed to stand one foot deep just above the terraces. In fifteen hours time all of this water was absorbed by the soil. A small amount of run off occurred below the last terrace and from a small pasture area. The total run off from the land protected by complete coordinated erosion control measures was negligible. Yet, a drain through the pasture on this farm ran 12 to 18 inches of water over a 15-foot spread two hours after the rain stopped. Since the rain covered only a small local area, the large volume of water passing through the drain came from less than a mile distance and from a drainage of from three to five hundred acres of land unprotected by soil and water conservation measures.

C. A. Rechenthin, Soil Surveyor, made the following report on moisture conditions two days after the rain on treated and untreated areas: The strip cropped, contour cultivated and terraced fields on the Blair farm had stored all the rainfall with 22 inches average penetration. An adjoining field with straight rows had moisture penetration of less than ten inches as compared to a minimum penetration of 18 inches on the field protected by terraces and contour cultivation.

A contour cultivated field on the Dilly farm, planted to cane, had a moisture penetration to 20 inches which indicates very little loss of water. In the same field with rows on the contour, and the major crop cotton with a strip of cane to every forty rows of cotton, the penetration of moisture was 16 inches as compared to 13 inches where rows were on the contour but no cane strips were used.

A high intensity rain, if water is uncontrolled, takes a heavy toll of soil. Observations of straight rows which were not on the contour revealed not only a loss of moisture but a heavy loss of soil. Small rivulets between the rows were 2 to 6 inches deep in appreciable numbers and loss of soil on the field would be considered excessive.

HUBAM CLOVER IN THE BLACKLANDS

By

V. W. Woodman, Project Manager,
Elm Creek Project, Temple, Texas.

Will Hubam clover be the answer to the need for a legume in the Blacklands of Texas? Present indications seem to point very definitely in that direction. Hubam has been used extensively as a feed and a soil improving crop and for strip crops during the past two years in the Elm Creek project area.

Hubam clover is an annual, white sweet clover. It is a fast growing, early maturing clover which may usually be harvested or turned under before root rot becomes active. The nature of the clover-- close growing, fibrous rooted-- makes it an excellent plant for strip cropping.

Hubam has shown much promise and seems to be destined to play the leading role in the search for a legume for the blacklands. It is the only legume of 15 species and varieties, which have been used by the Soil Conservation Service at Temple which shows definite promise for successful use in soils containing root rot and with the other crops commonly grown. Hubam was planted on 28 farms in the Elm Creek project area in 1935 and on 56 farms this year.

1. Seed bed preparations: Hubam clover should always be sown shallow and on a firm seed bed. On old fields or bare land, disk slightly; on small grain land no preparation is necessary. If land has been plowed use drag, roller or harrow to smooth down and pack seed bed.

2. Time to plant: Spring planting, February 15 to March 15; fall planting September 15 to November 10.

3. Where to plant: Hubam does well in a wide range of soils, in alkaline as well as acid soils.

4. Methods and rates of seeding: Hubam may be sown in broadcast strips for erosion control, or planted in 32 to 36 inch rows or with grain drill in oat fields after February 15, or with ordinary row planter. The amount of seed used, of course, depends upon germination and hard seed. In this area 15 to 25 pounds of seed are used when crop is planted broadcast and from 4 to 8 pounds of seed per acre when planted in row crop. Fall seedings should be heavier, so if some seed are killed by frost enough will be left to secure a stand in the spring.

5. Hubam seed should be inoculated if the land has not successfully grown Hubam or a close relative of Hubam.

6. Plowing under for green manure crop: First growth of Hubam may be turned under for green manure when two or three feet tall, or the first growth may be harvested and the second cutting turned under if growth permits before root rot becomes active.

7. Cutting and harvesting for hay: Hubam should be cut when 1/10 of blooms appear or before stems become too woody. Allow the crop to cure for two days in swath before hauling in or baling. Best quality hay may be had by cutting in early morning, and in a few hours rake hay in cocks so it can sweat a few days before baling or hauling to barn.

8. Cutting and threshing for seed: Cut Hubam when one-third of tips of seed pods turn brown. Cutting should be done with a binder in the early morning to prevent shattering of seed. Threshing may be done by hand or by using grain thresher with clover sieves and concaves swerved down. Hubam will produce from 300 to 500 pounds of seed per acre.

9. Hubam can be used in strips or washes for erosion control, as a green manure or forage crop and for hay and seed.

EROSION CONTROL PROGRAM LESSENS FLOOD HAZARDS

By

Paul A. Cunyus, Technician in Charge
SCS-T-27, Madisonville, Texas.

Overflows this spring and early summer on Shepherds Creek in Madison County have been nothing to compare with those of previous years in spite of heavy rains, according to--Arthur L. Martin, a Cooperator with Soil Conservation Service, ECW Camp No. 27 at Madisonville.

Mr. Martin's 400-acre farm forms the sides of a giant amphitheatre at the head of Shepherd's Creek. Mr. Martin has displayed great interest in the soil and water conservation program of the Soil Conservation Service and has given every cooperation in carrying out the program on his farm.

Backing Mr. Martin in his statement that the erosion control and water conservation program has been responsible for minimizing flood hazards along Shepherd's Creek are a brother, C. C. Martin and Barney McClain, whose 100-acre farms go to make up a 700-acre block of land that was planned for soil and moisture conservation by the Soil Conservation Service as a single unit.

"The water just didn't seem to find a way to run off after we planted strip crops, cultivated on the contour, took steep areas out of cultivation and put them into contour ridged pastures and terraced cultivated land where necessary. In placing the complete coordinated erosion control program on our farms we not only protected them from erosion but also held enough water on the land to put an end to the frequent overlows of Shepherd's Creek," Mr. Martin concluded.

MEADOW OUTLET STRIPS

By

Members of Project Staff
Pretty Creek Project, Clinton, La.

Sixteen meadow outlet strips have been prepared on the farms of cooperating farmers in the Pretty Creek Project area. These meadow outlets have a combined drainage area of 229 acres and have had terrace water running through them since construction.

Beginning at the logical point, that of planning, the project planning group early came to the conclusions that (1) it is unnecessary and uneconomical to construct outlet channels through areas already serving as a natural drainage way for run-off water; (2) vegetative protection and some smoothing of the water channel is all that is necessary to adequately care for the run off; (3) even if the meadow outlet strip fails to function as anticipated an outlet channel may be put in and protected quickly with little more cost than if the channel had been planned originally.

The first meadow outlet strip planned and constructed in the Pretty Creek project area was on the farm of Mr. Jay McKneely. This outlet was prepared during the month of March at a cost of $7. for the actual meadow strip. A terrace outlet channel was constructed and sodded down the hillside, where the grade was about 5%, to a natural depression where the grade gradually lessened. At this point the meadow outlet strip was started. The strip is about 400 feet long, and 45 feet wide. (Later experience has taught the Pretty Creek project technical staff that from the standpoint of good farm management and effective erosion control meadow outlets should be at least 100 feet wide.) The meadow outlet on the McKneely farm carries run off water from slightly more than 35 acres.

Encouraged by the successful operation of this first meadow strip during periods of heavy rains, additional strips were used on other farms. The technical staff of the Pretty Creek project believes that if meadow outlet strips were prepared a year in advance of terracing, only mechanical preparation and seeding would be necessary.

Experience with meadow or pasture outlet strips in the Pretty Creek project has led staff members to the following conclusions:

1. Meadow or pasture outlet strips are the most economical and permanent type of outlets for run off water.

2. They can be constructed with the average equipment on the farm.

3. In addition to serving as terrace outlets they are also a source of feed in the form of roughage from some of the most fertile soil on the farm, that might occasionally be too "seepy" for cultivation.

4. The most important step involved in constructing a meadow or pasture outlet is the selection of a proper location. A natural swale or depression in the field should be selected so as to reduce excavation to a minimum and still adequately handle maximum run off.

5. Safe water carrying capacity of meadow outlets should be computed in the same manner as are outlet channels in order to insure proper width and depth if there is any doubt that a strip 100' wide will be sufficient.

6. Terraces emptying into the outlet strip should extend at least 12 feet into the meadow outlet to prevent water from backing up in terraces after heavy rains.

7. Rows should be extended to run into the strip and should be slightly turned down at the ends. Small gullies and broken rows at the edge of the strip are undesirable.

8. Seeding and sprig sodding should be practiced alone only if the strip is constructed a season before allowing terraces to empty into them.

9. Inasmuch as meadow outlet strips are usually planned to occupy the areas where run off waters naturally collect and vegetation is usually present before its construction, every effort should be made to avoid disturbing this vegetation.

10. In preparing the outlet high and low spots should be eliminated and the whole channel constructed so as to present a "saucer shape."

11. Meadow or pasture outlets should be mowed at least twice annually so as to reduce undesirable vegetation, thus allowing desirable grasses to spread more rapidly.

12. Where it is necessary to empty terraces into the outlet immediately after its construction, strips of sod should be placed across the outlet where the concentration of water will be the greatest.

13. The best adapted plants to act as a nurse crop and furnish a protective cover until Bermuda grass or carpet grass is well established should be planted on newly constructed meadow outlet strips.

CULTIVATION HELPS BLACK LOCUST PLANTATION

By

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Demonstrating the practicability of cultivating land planted to new forests, J. W. Colvin of Vienna proudly points to a 6-acre plot planted in Black Locust trees. Mr. Colvin was one of the first farmers in the Cypress Creek Watershed to become a Cooperator with the Soil Conservation Service.

Last year this same 6-acre plot was planted to Black Locust trees without any previous preparation or further cultivation. A survival check last fall revealed that a negligible number of plants survived.

Mr. Colvin flat-broke his field last fall and laid it off on the contour. This plot of ground has a 9% slope and 2B erosion. The soil on the field is Ruston fine sandy loam, gravelly phase, and Kirvin fine sandy loam. One month before the planting season the field was contour furrowed as a precaution against washing during the heavy rains. A total of 1742 Black Locust plants, each about 3 feet high, was set out to the acre.

Since the planting, Mr. Colvin has given the field two plowings. Presently the young trees have attained an average height of 8 feet, a growth almost unprecedented by any other variety of plants. The field is fenced to protect the trees from livestock.

In commenting on his Black Locust plot, Mr. Colvin stated: "I have never seen anything grow as fast as have these Black Locusts. At the present rate within the next seven years, I'll have a goodly number of fence posts on my farm from the Black Locust trees".

Because of the phenomenal growing power of Black Locust, this species is used extensively in the Cypress Creek Project area, where soil conditions permit. They have a tendency to grow straight when crowded, and due to the durability of the wood, Black Locust make excellent fence posts.

Within the Cypress Creek watershed area, a total of 787 acres have been retired from cultivation and planted to new forests.

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